ABSTRACT:

A study has been executed to evaluate the performance of MBR treatingsynthetic-municipalwastewater at three various temperatures (25, 35 and 45 °C), and two hydraulic fluxes (10 and 15 LMH). The system was operated under MLSS ranged between 8000 and 10,000 mg/L. The study demonstrates that the biomass reduction, the poor sludge settleability and the supernatant turbidity caused by temperature increase. The temperature increase led to increase in SMP carbohydrate and protein, and decrease in EPS protein and the ratio of EPS protein to carbohydrate. COD removal efficiencies decreased with temperature increase. At 25 °C, COD BioRE was 90% and FinRE was 95%. COD BioRE dropped with temperature increase to -10% at 45 °C. The lowest COD FinRE was 50% at 45 °C and all other values of COD FinRE were higher than that. Both NH3–N removal efficiencies were very high up to 100% at 25 and 35 °C while at 45 °C they ranged between 27 and 57%. The viscosity decreased with temperature increase. TMP and BWP ascended with temperature and flux increase. The highest TMP values were 348 and 429 mbar at 10 and 15 LMH respectively at 45 °C.